

STATE OF
COLORADO

EnviroScan - DNR, OGCC <dnr_ogcc.enviroscan@state.co.us>

Fwd: Walden Waterflood Facility Remediation #7037

1 message

Fischer - DNR, Alex <alex.fischer@state.co.us>
To: OGCC EnviroScan - DNR <ogcc.enviroscan@state.co.us>

Thu, Oct 30, 2014 at 10:58 AM

Please upload email and attachments to REM 7037.

----- Forwarded message -----

From: **Brian Dodek** <BDodek@bonanzacrk.com>
Date: Wed, Jul 30, 2014 at 6:06 PM
Subject: Walden Waterflood Facility Remediation #7037
To: "alex.fischer@state.co.us" <alex.fischer@state.co.us>
Cc: Peg Young <pyoung@bonanzacrk.com>

Alex,
I have attached the most recent groundwater analytical results and water table elevation data from the Walden Waterflood Facility (WWFF) site (Remediation #7037). We can discuss once we are able to schedule a meeting. Just FYI - we will be conducting the next quarterly groundwater monitoring event in August 2014.

Please let me know if you have any questions regarding the attached data.

Thanks,
Brian

Brian Dodek, P.G.
Environmental Specialist
Bonanza Creek Energy, Inc.
410 17th Street, Suite 1400
Denver, CO 80202
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[cid:image001.png@01CDC0C7.F28C0560] <<http://www.bonanzacrk.com/>>

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--

Alex Fischer, P.G.**Environmental Supervisor, Western Colorado**



COLORADO
Oil & Gas Conservation
Commission
Department of Natural Resources

P [303.894.2100](tel:303.894.2100) x5138 | F [303.894.2109](tel:303.894.2109)

1120 Lincoln Street, Suite 801, Denver, CO 80203

| alex.fischer@state.co.us www.colorado.gov/cogcc

2 attachments

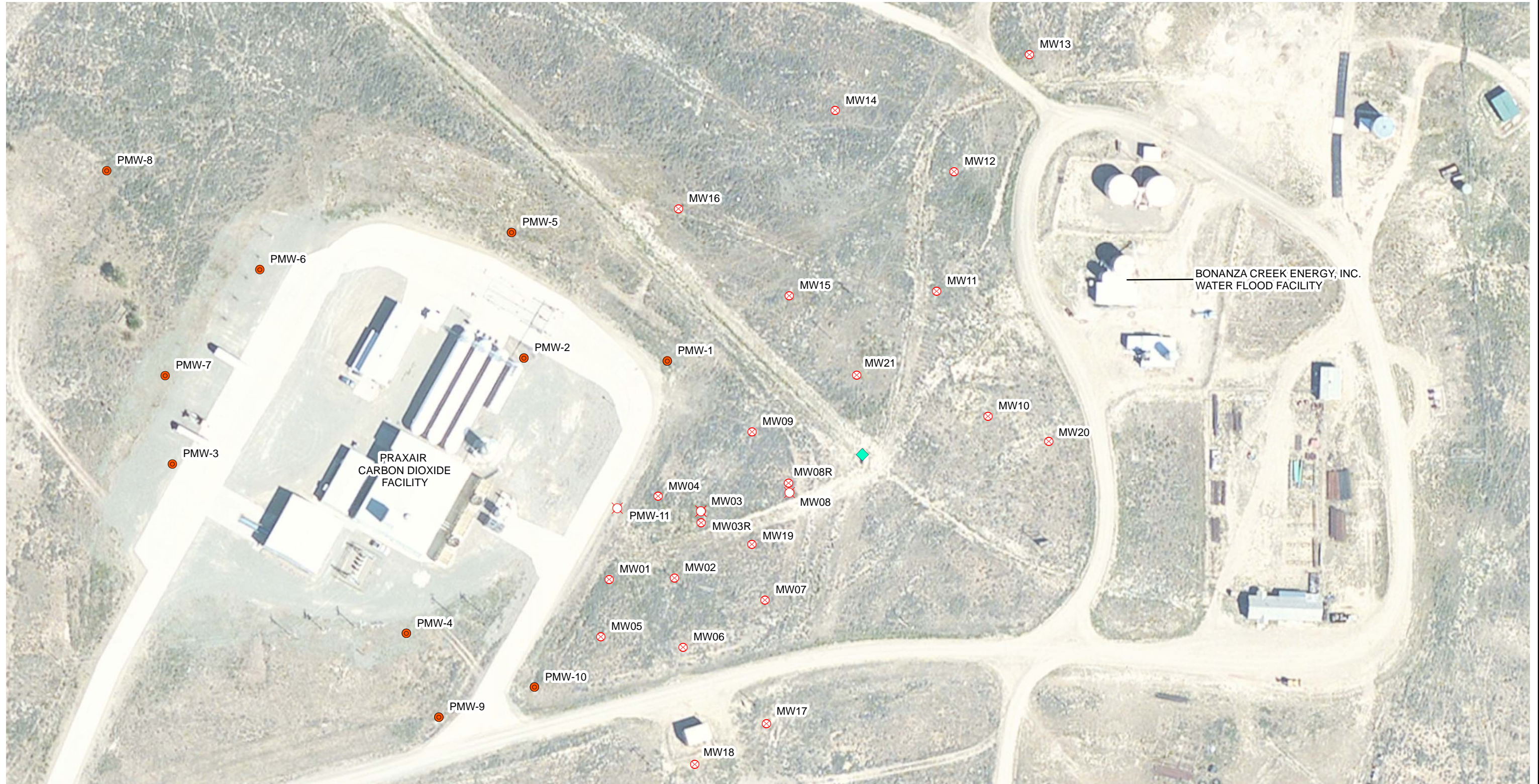


**BONANZA
CREEK**

image001.png
6K



WWFF - Groundwater Monitoring Status_5-22-2014.pdf
1183K



LEGEND

- ⊗ MONITORING WELL
- PRAXAIR MONITORING WELL
- ⊗ DESTROYED MONITORING WELL
- ◆ INJECTION WELL

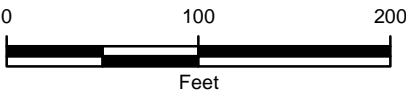


IMAGE COURTESY OF ESRI



FIGURE 1
SITE MAP
WALDEN WATER FLOOD FACILITY
SEnw & NESw SEC 2-T9N-R79W
JACKSON COUNTY, COLORADO

BONANZA CREEK ENERGY OPERATING COMPANY LLC



TABLE 1
GROUNDWATER SAMPLE ANALYTICAL DATA
WALDEN WATER FLOOD FACILITY
BONANZA CREEK ENERGY OPERATING COMPANY LLC

SAMPLE ID	SAMPLE DATE	DTW (feet bgs)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYLBENZENE (ug/L)	XYLENES (Total) (ug/L)
MW01	8/22/2012	9.03	810	1.3	400	840
	11/7/2012	10.30	810	<1.0	160	910
	2/28/2013	10.16	790	<1.0	210	570
	5/21/2013	8.96	620	<1.0	160	440
	8/13/2013	9.90	360	<1.0	150	240
	11/13/2013	9.62	200	<1.0	4.2	140
	2/24/2014	10.64	94	<1.0	<1.0	15
	5/8/2014	8.47	250	<1.0	46	140
MW02	8/22/2012	9.46	2,100	1.7	670	5,400
	11/7/2012	10.00	2,400	<1.0	700	5,400
	2/28/2013	10.15	3,200	<1.0	740	4,300
	5/21/2013	9.33	790	<1.0	150	960
	8/13/2013	10.09	650	<1.0	210	1,100
	11/13/2013	9.91	720	<1.0	66	960
	2/24/2014	10.76	310	<1.0	<1.0	47
	5/9/2014	8.65	170	<1.0	8.1	160
MW03	8/22/2012	8.96	560	100	480	2,500
	11/7/2012	9.84	Product	Product	Product	Product
	2/28/2013	Frozen	-	-	-	-
	5/21/2013	Destroyed	-	-	-	-
MW03R*	8/13/2013	10.37	1,900	25	290	1,500
	11/13/2013	10.21	2,100	10	70	1,000
	2/24/2014	11.01	1,600	11	<1.0	210
	5/9/2014	8.89	1,700	130	360	1,500
MW04	8/22/2012	9.13	6.6	7.9	200	410
	11/7/2012	10.50	2.5	<1.0	62	60
	2/28/2013	9.85	4.1	<1.0	66	58
	5/21/2013	8.88	<1.0	<1.0	6.4	6.1
	8/13/2013	9.82	1.6	<1.0	19	13
	11/13/2013	9.57	1.9	<1.0	5.7	15
	2/24/2014	10.51	15	<1.0	22	40
	5/9/2014	8.27	3.6	<1.0	15	22
MW05	8/22/2012	14.13	<1.0	<1.0	<1.0	2.2
	11/7/2012	8.00	<1.0	<1.0	<1.0	<1.0
	2/28/2013	10.18	<1.0	<1.0	<1.0	<1.0
	5/21/2013	9.40	<1.0	<1.0	<1.0	<1.0
	8/13/2013	10.16	<1.0	<1.0	<1.0	<1.0
	11/13/2013	9.92	<1.0	<1.0	<1.0	<1.0
	2/24/2014	10.69	<1.0	<1.0	<1.0	<1.0
	5/8/2014	8.77	<1.0	<1.0	<1.0	<1.0
MW06	8/22/2012	10.16	1,200	4.9	300	1,200
	11/7/2012	10.72	9.8	1.6	200	540
	2/28/2013	10.76	1,100	1.2	170	360
	5/21/2013	10.01	1,300	3.0	210	710
	8/13/2013	10.70	1,400	5.2	280	1,200
	11/13/2013	10.58	1,400	4.1	290	840
	2/24/2014	11.24	1,500	1.5	27	170
	5/8/2014	9.22	1,300	1.5	67	270
MW07	8/22/2012	9.74	1.5	1.2	4.6	33
	11/7/2012	9.90	2.0	<1.0	1.2	8.7
	2/28/2013	10.44	2.3	<1.0	<1.0	<1.0
	5/21/2013	9.77	2.8	<1.0	1.0	5.4
	8/13/2013	10.44	7.8	<1.0	1.1	2.3
	11/13/2013	10.46	2.7	<1.0	<1.0	<1.0
	2/24/2014	10.97	30	<1.0	1.4	34
	5/9/2014	8.87	100	5.4	31	120

TABLE 1
GROUNDWATER SAMPLE ANALYTICAL DATA
WALDEN WATER FLOOD FACILITY
BONANZA CREEK ENERGY OPERATING COMPANY LLC

SAMPLE ID	SAMPLE DATE	DTW (feet bgs)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYLBENZENE (ug/L)	XYLENES (Total) (ug/L)
MW08	8/22/2012	10.09	7,000	13,000	830	7,800
	11/7/2012	10.43	Product	Product	Product	Product
	2/28/2013	10.66	Product	Product	Product	Product
	5/21/2013	9.76	8,000	11,000	440	6,700
MW08R*	8/13/2013	10.50	6,700	8,600	520	4,900
	11/13/2013	10.58	7,700	9,300	680	6,200
	2/24/2014	NM	5,400	6,500	670	7,000
	5/9/2014	9.37	6,100	6,900	670	6,800
MW09	8/22/2012	9.47	1,400	1,700	200	1,700
	11/7/2012	11.41	4,100	4,600	430	3,500
	2/28/2013	10.01	7,200	6,700	680	5,100
	5/21/2013	9.09	5,100	5,000	440	3,900
	8/13/2013	9.96	720	470	67	360
	11/13/2013	9.87	1,100	530	<1.0	520
	2/24/2014	10.47	900	32	<1.0	84
	5/9/2014	8.28	920	85	23	280
MW10	8/22/2012	7.88	100	<1.0	3.5	14
	11/7/2012	8.66	120	5.2	5.1	30
	2/28/2013	10.75	120	<1.0	2.0	<1.0
	5/21/2013	7.38	70	2.6	<1.0	3.0
	8/13/2013	8.18	19	<1.0	<1.0	<1.0
	11/13/2013	8.28	8.8	1.2	<1.0	<1.0
	2/24/2014	8.81	3.5	<1.0	<1.0	<1.0
	5/8/2014	6.54	3.2	1.1	<1.0	<1.0
MW11	8/22/2012	14.18	<1.0	<1.0	<1.0	<1.0
	11/7/2012	9.75	<1.0	<1.0	<1.0	<1.0
	2/28/2013	6.87	10	<1.0	2.8	16
	5/21/2013	6.63	<1.0	<1.0	<1.0	<1.0
	8/13/2013	8.04	<1.0	<1.0	<1.0	<1.0
	11/13/2013	7.97	<1.0	<1.0	<1.0	<1.0
	2/24/2014	8.27	<1.0	<1.0	<1.0	<1.0
	5/8/2014	6.21	<1.0	<1.0	<1.0	<1.0
MW12	8/22/2012	Dry	Dry	Dry	Dry	Dry
	11/7/2012	7.42	<1.0	<1.0	<1.0	<1.0
	2/28/2013	7.52	<1.0	<1.0	<1.0	<1.0
	5/21/2013	6.62	<1.0	<1.0	<1.0	<1.0
	8/13/2013	9.02	<1.0	<1.0	<1.0	<1.0
	11/13/2013	9.01	<1.0	<1.0	<1.0	<1.0
	2/24/2014	9.25	<1.0	<1.0	<1.0	<1.0
	5/8/2014	7.21	<1.0	<1.0	<1.0	<1.0
MW13	8/22/2012	Dry	Dry	Dry	Dry	Dry
	11/7/2012	9.01	<1.0	<1.0	<1.0	<1.0
	2/28/2013	9.27	<1.0	<1.0	<1.0	<1.0
	5/21/2013	7.86	<1.0	1.2	<1.0	<1.0
	8/13/2013	8.27	<1.0	<1.0	<1.0	<1.0
	11/13/2013	8.48	<1.0	<1.0	<1.0	<1.0
	2/24/2014	8.82	<1.0	<1.0	<1.0	<1.0
	5/8/2014	7.25	<1.0	<1.0	<1.0	<1.0
MW14	8/22/2012	Dry	Dry	Dry	Dry	Dry
	11/7/2012	10.12	1.1	<1.0	<1.0	<1.0
	2/28/2013	10.01	<1.0	<1.0	<1.0	<1.0
	5/21/2013	7.74	<1.0	<1.0	<1.0	<1.0
	8/13/2013	8.84	<1.0	<1.0	<1.0	<1.0
	11/13/2013	9.01	<1.0	<1.0	<1.0	<1.0
	2/24/2014	8.92	<1.0	<1.0	<1.0	<1.0
	5/8/2014	6.91	<1.0	<1.0	<1.0	<1.0

TABLE 1
GROUNDWATER SAMPLE ANALYTICAL DATA
WALDEN WATER FLOOD FACILITY
BONANZA CREEK ENERGY OPERATING COMPANY LLC

SAMPLE ID	SAMPLE DATE	DTW (feet bgs)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYLBENZENE (ug/L)	XYLENES (Total) (ug/L)
MW15	8/22/2012	10.51	4.7	<1.0	<1.0	<1.0
	11/7/2012	8.37	16	<1.0	<1.0	<1.0
	2/28/2013	9.04	19	<1.0	<1.0	<1.0
	5/21/2013	7.79	5.9	<1.0	<1.0	<1.0
	8/13/2013	9.09	3.9	<1.0	<1.0	<1.0
	11/13/2013	8.94	1.7	<1.0	<1.0	<1.0
	2/24/2014	9.38	1.1	<1.0	<1.0	<1.0
	5/8/2014	7.20	<1.0	<1.0	<1.0	<1.0
MW16	8/22/2012	8.67	<1.0	<1.0	<1.0	<1.0
	11/7/2012	9.16	2.9	<1.0	<1.0	<1.0
	2/28/2013	8.99	2.6	<1.0	<1.0	<1.0
	5/21/2013	7.87	2.1	<1.0	<1.0	<1.0
	8/13/2013	9.08	<1.0	<1.0	<1.0	<1.0
	11/13/2013	8.87	<1.0	<1.0	<1.0	<1.0
	2/24/2014	9.38	<1.0	<1.0	<1.0	<1.0
	5/8/2014	7.20	<1.0	<1.0	<1.0	<1.0
MW17	8/13/2013	11.62	<1.0	<1.0	<1.0	<1.0
	11/13/2013	11.66	<1.0	<1.0	<1.0	<1.0
	2/24/2014	12.09	<1.0	<1.0	<1.0	<1.0
	5/8/2014	10.20	<1.0	<1.0	<1.0	<1.0
MW18	8/13/2013	11.31	<1.0	<1.0	<1.0	<1.0
	11/13/2103	11.34	<1.0	<1.0	<1.0	<1.0
	2/24/2014	11.79	<1.0	<1.0	<1.0	<1.0
	5/8/2014	10.35	<1.0	<1.0	<1.0	<1.0
MW19	8/13/2013	10.09	1,900	41	470	1,500
	11/13/2013	10.06	2,100	11	420	1,400
	2/24/2014	10.63	1,200	5.7	77	350
	5/9/2014	8.48	1,100	5.0	180	550
MW20	8/13/2013	8.43	<1.0	<1.0	<1.0	<1.0
	11/13/2013	8.48	<1.0	<1.0	<1.0	<1.0
	2/24/2014	9.04	<1.0	<1.0	<1.0	<1.0
	5/8/2014	6.66	<1.0	<1.0	<1.0	<1.0
MW21	8/13/2013	9.31	520	<1.0	47	18
	11/13/2013	9.25	<1.0	<1.0	<1.0	<1.0
	2/24/2014	9.69	<1.0	<1.0	<1.0	<1.0
	5/9/2014	7.50	180	<1.0	4.7	6.9
COGCC Allowable Levels			5	560	700	1,400

Notes:

DTW - Depth to Water

bgs - below ground surface

µg/L - Micrograms per liter

COGCC - Colorado Oil and Gas Conservation Commission

* - Denotes 2" diameter monitoring well

Results noted in bold exceed COGCC Table 910.1 allowable levels.

TABLE 2
GROUNDWATER ELEVATION AND PRODUCT THICKNESS
WALDEN WATER FLOOD FACILITY
BONANZA CREEK ENERGY OPERATING COMPANY LLC

SAMPLE ID	Gauge Date	TOC Well Elevation (feet)	TOC DTW (feet)	Product Thickness (feet)	Groundwater Elevation (feet)
MW01	8/22/2012	8225.06	12.58		8212.48
	11/7/2012	8225.06	13.85		8211.21
	2/28/2013	8225.06	13.51		8211.55
	5/20/2013	8225.06	12.51		8212.55
	7/16/2013	8225.06	13.11		8211.95
	8/13/2013	8225.06	13.45		8211.61
	9/18/2013	8225.06	12.92		8212.14
	10/22/2013	8225.06	12.98		8212.08
	11/13/2013	8225.06	13.17		8211.89
	12/18/2013	8225.06	13.51		8211.55
	1/28/2014	8225.06	13.95		8211.11
	2/24/2014	8225.06	14.19		8210.87
	3/26/2014	8225.06	13.73		8211.33
	4/23/2014	8225.06	12.16		8212.90
	5/8/2014	8225.06	12.02		8213.04
MW02	8/22/2012	8224.87	12.74		8212.13
	11/7/2012	8224.87	13.28		8211.59
	2/28/2013	8224.87	13.43		8211.44
	5/20/2013	8224.87	12.61		8212.26
	7/16/2013	8224.87	13.02		8211.85
	8/13/2013	8224.87	13.37		8211.50
	9/18/2013	8224.87	13.25		8211.62
	10/22/2013	8224.88	13.15		8211.73
	11/13/2013	8224.87	13.19		8211.68
	12/18/2013	8224.87	13.50		8211.37
	1/28/2014	8224.87	13.83		8211.04
	2/24/2014	8224.87	14.04		8210.83
	3/26/2014	8224.87	13.62		8211.25
	4/23/2014	8224.87	12.06		8212.81
	5/8/2014	8224.87	12.02		8212.85
MW03	8/22/2012	8224.91	12.72		8212.19
	11/7/2012	8224.91	13.60		8211.33
	2/28/2013	8224.91	Frozen	0.02	NA
	5/21/2013	8224.91	Destroyed		NA
MW03R	8/13/2013	8224.5	13.20		8211.30
	9/18/2013	8224.5	13.09		8211.41
	10/22/2013	8224.5	12.04		8212.46
	11/13/2013	8224.5	13.04		8211.46
	12/18/2013	8224.5	13.25		8211.25
	1/28/2014	8224.5	13.65		8210.85
	2/24/2014	8224.5	13.84		8210.66
	3/26/2014	8224.5	13.47		8211.03
	4/23/2014	8224.5	11.88		8212.62
	5/8/2014	8224.5	11.72		8212.78



TABLE 2
GROUNDWATER ELEVATION AND PRODUCT THICKNESS
WALDEN WATER FLOOD FACILITY
BONANZA CREEK ENERGY OPERATING COMPANY LLC

SAMPLE ID	Gauge Date	TOC Well Elevation (feet)	TOC DTW (feet)	Product Thickness (feet)	Groundwater Elevation (feet)
MW04	8/22/2012	8223.84	11.90		8211.94
	11/7/2012	8223.84	13.27		8210.57
	2/28/2013	8223.84	12.62		8211.22
	5/20/2013	8223.84	11.65		8212.19
	7/16/2013	8223.84	12.18		8211.66
	8/13/2013	8223.84	12.59		8211.25
	9/18/2013	8223.84	12.14		8211.70
	10/22/2013	8223.84	12.18		8211.66
	11/13/2013	8223.84	12.34		8211.50
	12/18/2013	8223.84	12.67		8211.17
	1/28/2014	8223.84	13.07		8210.77
	2/24/2014	8223.84	13.28		8210.56
	3/26/2014	8223.84	12.06		8211.78
	4/23/2014	8223.84	11.08		8212.76
	5/8/2014	8223.84	11.04		8212.80
MW05	8/22/2012	8224.99	17.45		8207.54
	11/7/2012	8224.99	11.22		8213.77
	2/28/2013	8224.99	13.40		8211.59
	5/20/2013	8224.99	12.72		8212.27
	7/16/2013	8224.99	13.03		8211.96
	8/13/2013	8224.99	13.38		8211.61
	9/18/2013	8224.99	13.36		8211.63
	10/22/2013	8224.99	13.01		8211.98
	11/14/2013	8224.99	13.14		8211.85
	12/18/2013	8224.99	13.42		8211.57
	1/28/2014	8224.99	13.78		8211.21
	2/25/2014	8224.99	13.91		8211.08
	3/26/2014	8224.99	13.51		8211.48
	4/23/2014	8224.99	12.17		8212.82
	5/8/2014	8224.99	12.09		8212.90
MW06	8/22/2012	8225.32	13.36		8211.96
	11/7/2012	8225.32	13.92		8211.40
	2/28/2013	8225.32	13.96		8211.36
	5/20/2013	8225.32	13.21		8212.11
	7/16/2013	8225.32	13.47		8211.85
	8/13/2013	8225.32	13.90		8211.42
	9/18/2013	8225.32	13.83		8211.49
	10/22/2013	8225.32	13.71		8211.61
	11/14/2013	8225.32	13.78		8211.54
	12/18/2013	8225.32	13.94		8211.38
	1/28/2014	8225.32	14.29		8211.03
	2/24/2014	8225.32	14.49		8210.83
	3/26/2014	8225.32	13.78		8211.54
	4/23/2014	8225.32	12.56		8212.76
	5/8/2014	8225.32	12.42		8212.90



TABLE 2
GROUNDWATER ELEVATION AND PRODUCT THICKNESS
WALDEN WATER FLOOD FACILITY
BONANZA CREEK ENERGY OPERATING COMPANY LLC

SAMPLE ID	Gauge Date	TOC Well Elevation (feet)	TOC DTW (feet)	Product Thickness (feet)	Groundwater Elevation (feet)
MW07	8/22/2012	8224.72	12.71		8212.01
	11/7/2012	8224.72	12.87		8211.85
	2/28/2013	8224.72	13.41		8211.31
	5/20/2013	8224.72	12.74		8211.98
	7/16/2013	8224.72	12.98		8211.74
	8/13/2013	8224.72	13.41		8211.31
	9/18/2013	8224.72	13.63		8211.09
	10/22/2013	8224.72	13.43		8211.29
	11/14/2013	8224.72	13.43		8211.29
	12/18/2013	8224.72	13.51		8211.21
	1/28/2014	8224.72	13.86		8210.86
	2/24/2014	8224.72	13.94		8210.78
	3/26/2014	8224.72	13.66		8211.06
	4/23/2014	8224.72	11.97		8212.75
	5/8/2014	8224.72	11.84		8212.88
MW08	8/22/2012	8224.74	12.94		8211.80
	11/7/2012	8224.74	13.28	0.02	8211.48
	2/28/2013	8224.74	13.51	0.04	8211.26
	5/21/2013	8224.74	12.61		8212.13
	7/16/2013	8224.74	13.26	0.06	8211.53
MW08R*	8/13/2013	8224.43	13.32		8211.11
	9/18/2013	8224.43	13.52	0.01	8210.92
	10/22/2013	8224.43	13.37	0.01	8211.07
	11/13/2013	8224.43	13.40	0.03	8211.05
	12/18/2013	8224.43	13.59		8210.84
	1/28/2014	8224.43	13.82	0.01	8210.62
	2/24/2014	8224.43	14.21		8210.22
	3/26/2014	8224.43	14.10	0.01	8210.34
	4/23/2014	8224.43	12.57	0.01	8211.87
	5/8/2014	8224.43	12.19	0.01	8212.25
MW09	8/22/2012	8223.75	12.31		8211.44
	11/7/2012	8223.75	14.25		8209.50
	2/28/2013	8223.75	12.85		8210.90
	5/20/2013	8223.75	11.93		8211.82
	7/16/2013	8223.75	12.31		8211.44
	8/13/2013	8223.75	12.80		8210.95
	9/18/2013	8223.75	12.82		8210.93
	10/22/2013	8223.75	12.72		8211.03
	11/13/2013	8223.75	12.71		8211.04
	12/18/2013	8223.75	12.81		8210.94
	1/28/2014	8223.75	13.12		8210.63
	2/24/2014	8223.75	13.31		8210.44
	3/26/2014	8223.75	13.07		8210.68
	4/23/2014	8223.75	11.15		8212.60
	5/8/2014	8223.75	11.12		8212.63



TABLE 2
GROUNDWATER ELEVATION AND PRODUCT THICKNESS
WALDEN WATER FLOOD FACILITY
BONANZA CREEK ENERGY OPERATING COMPANY LLC

SAMPLE ID	Gauge Date	TOC Well Elevation (feet)	TOC DTW (feet)	Product Thickness (feet)	Groundwater Elevation (feet)
MW10	8/22/2012	8222.39	11.11		8211.28
	11/7/2012	8222.39	11.89		8210.50
	2/28/2013	8222.39	13.98		8208.41
	5/20/2013	8222.39	10.61		8211.78
	7/16/2013	8222.39	10.94		8211.45
	8/13/2013	8222.39	11.41		8210.98
	9/18/2013	8222.39	11.55		8210.84
	10/22/2013	8222.39	11.59		8210.80
	11/13/2013	8222.39	11.51		8210.88
	12/18/2013	8222.39	11.59		8210.80
	1/28/2014	8222.39	11.92		8210.47
	2/24/2014	8222.39	12.04		8210.35
	3/26/2014	8222.39	11.50		8210.89
	4/23/2014	8222.39	9.82		8212.57
	5/8/2014	8222.39	9.77		8212.62
MW11	8/22/2012	8221.35	17.52		8203.83
	11/7/2012	8221.35	13.09		8208.26
	2/28/2013	8221.35	10.21		8211.14
	5/20/2013	8221.35	9.97		8211.38
	7/16/2013	8221.35	10.83		8210.52
	8/13/2013	8221.35	11.38		8209.97
	9/18/2013	8221.35	11.55		8209.80
	10/22/2013	8221.35	11.41		8209.94
	11/13/2013	8221.35	11.31		8210.04
	12/18/2013	8221.35	11.32		8210.03
	1/28/2014	8221.35	11.47		8209.88
	2/24/2014	8221.35	11.61		8209.74
	3/26/2014	8221.35	11.39		8209.96
	4/23/2014	8221.35	9.73		8211.62
	5/8/2014	8221.35	9.55		8211.80
MW12	8/22/2012	8222.01	Dry		NA
	11/7/2012	8222.01	11.22		8210.79
	2/28/2013	8222.01	11.32		8210.69
	5/20/2013	8222.01	10.42		8211.59
	7/16/2013	8222.01	12.33		8209.68
	8/13/2013	8222.01	12.82		8209.19
	9/18/2013	8222.01	12.95		8209.06
	10/22/2013	8222.01	12.83		8209.18
	11/13/2013	8222.01	12.81		8209.20
	12/18/2013	8222.01	12.81		8209.20
	1/28/2014	8222.01	12.95		8209.06
	2/24/2014	8222.01	13.05		8208.96
	3/26/2014	8222.01	12.61		8209.40
	4/23/2014	8222.01	10.97		8211.04
	5/8/2014	8222.01	10.99		8211.02



TABLE 2
GROUNDWATER ELEVATION AND PRODUCT THICKNESS
WALDEN WATER FLOOD FACILITY
BONANZA CREEK ENERGY OPERATING COMPANY LLC

SAMPLE ID	Gauge Date	TOC Well Elevation (feet)	TOC DTW (feet)	Product Thickness (feet)	Groundwater Elevation (feet)
MW13	8/22/2012	8220.59	Dry		NA
	11/7/2012	8220.59	12.22		8208.37
	2/28/2013	8220.59	12.48		8208.11
	5/20/2013	8220.59	11.07		8209.52
	7/16/2013	8220.59	11.04		8209.55
	8/13/2013	8220.59	11.48		8209.11
	9/18/2013	8220.59	11.69		8208.90
	10/22/2013	8220.59	11.68		8208.91
	11/18/2013	8220.59	11.69		8208.90
	12/18/2013	8220.59	11.82		8208.77
	1/28/2014	8220.59	11.97		8208.62
	2/24/2014	8220.59	12.03		8208.56
	3/26/2014	8220.59	11.47		8209.12
	4/23/2014	8220.59	10.91		8209.68
	5/8/2014	8220.59	10.80		8209.79
MW14	8/22/2012	8222.54	Dry		NA
	11/7/2012	8222.54	13.42		8209.12
	2/28/2013	8222.54	13.31		8209.23
	5/20/2013	8222.54	11.04		8211.50
	7/16/2013	8222.54	11.58		8210.96
	8/13/2013	8222.54	12.14		8210.40
	9/18/2013	8222.54	12.52		8210.02
	10/22/2013	8222.54	12.46		8210.08
	11/13/2013	8222.54	12.31		8210.23
	12/18/2013	8222.54	12.11		8210.43
	1/28/2014	8222.54	12.16		8210.38
	2/24/2014	8222.54	12.22		8210.32
	3/26/2014	8222.54	12.24		8210.30
	4/23/2014	8222.54	10.32		8212.22
	5/8/2014	8222.54	10.21		8212.33
MW15	8/22/2012	8222.56	13.82		8208.74
	11/7/2012	8222.56	11.68		8210.88
	2/28/2013	8222.56	12.35		8210.21
	5/20/2013	8222.56	11.10		8211.46
	7/16/2013	8222.56	11.90		8210.66
	8/13/2013	8222.56	12.40		8210.16
	9/18/2013	8222.56	12.61		8209.95
	10/22/2013	8222.56	12.39		8210.17
	11/13/2013	8222.56	12.25		8210.31
	12/18/2013	8222.56	12.24		8210.32
	1/28/2014	8222.56	12.54		8210.02
	2/24/2014	8222.56	12.69		8209.87
	3/26/2014	8222.56	12.62		8209.94
	4/23/2014	8222.56	10.63		8211.93
	5/8/2014	8222.56	10.51		8212.05



TABLE 2
GROUNDWATER ELEVATION AND PRODUCT THICKNESS
WALDEN WATER FLOOD FACILITY
BONANZA CREEK ENERGY OPERATING COMPANY LLC

SAMPLE ID	Gauge Date	TOC Well Elevation (feet)	TOC DTW (feet)	Product Thickness (feet)	Groundwater Elevation (feet)
MW16	8/22/2012	8222.75	12.49		8210.26
	11/7/2012	8222.75	12.98		8209.77
	2/28/2013	8222.75	12.81		8209.94
	5/20/2013	8222.75	11.69		8211.06
	7/16/2013	8222.75	12.43		8210.32
	8/13/2013	8222.75	12.90		8209.85
	9/18/2013	8222.75	12.91		8209.84
	10/22/2013	8222.75	12.74		8210.01
	11/13/2013	8222.75	12.69		8210.06
	12/18/2013	8222.75	12.71		8210.04
	1/28/2014	8222.75	13.05		8209.70
	2/24/2014	8222.75	13.20		8209.55
	3/26/2014	8222.75	12.97		8209.78
	4/23/2014	8222.75	11.04		8211.71
	5/8/2014	8222.75	11.02		8211.73
MW17	8/13/2013	8225.94	14.62		8211.32
	9/18/2013	8225.94	14.83		8211.11
	10/22/2013	8225.94	14.69		8211.25
	11/14/2013	8225.94	14.66		8211.28
	12/18/2013	8225.94	14.77		8211.17
	1/28/2014	8225.94	15.01		8210.93
	2/25/2014	8225.94	15.09		8210.85
	3/26/2014	8225.94	14.63		8211.31
	4/23/2014	8225.94	13.22		8212.72
	5/8/2014	8225.94	13.20		8212.74
MW18	8/13/2013	8225.58	14.21		8211.37
	9/18/2013	8225.58	14.14		8211.44
	10/22/2013	8225.58	14.19		8211.39
	11/14/2013	8225.58	14.24		8211.34
	12/18/2013	8225.58	14.34		8211.24
	1/28/2014	8225.58	14.58		8211.00
	2/25/2014	8225.58	14.69		8210.89
	3/26/2014	8225.58	14.59		8210.99
	4/23/2014	8225.58	13.57		8212.01
	5/8/2014	8225.58	13.25		8212.33
MW19	8/13/2013	8224.13	12.91		8211.22
	9/18/2013	8224.13	13.00		8211.13
	10/22/2013	8224.13	12.90		8211.23
	11/13/2013	8224.13	12.88		8211.25
	12/18/2013	8224.13	12.96		8211.17
	1/28/2014	8224.13	13.30		8210.83
	2/24/2014	8224.13	13.45		8210.68
	3/26/2014	8224.13	13.11		8211.02
	4/23/2014	8224.13	11.51		8212.62
	5/8/2014	8224.13	11.30		8212.83



TABLE 2
GROUNDWATER ELEVATION AND PRODUCT THICKNESS
WALDEN WATER FLOOD FACILITY
BONANZA CREEK ENERGY OPERATING COMPANY LLC

SAMPLE ID	Gauge Date	TOC Well Elevation (feet)	TOC DTW (feet)	Product Thickness (feet)	Groundwater Elevation (feet)
MW20	8/13/2013	8222.14	11.18		8210.96
	9/18/2013	8222.14	11.36		8210.78
	10/22/2013	8222.14	11.23		8210.91
	11/13/2013	8222.14	11.23		8210.91
	12/18/2013	8222.14	11.34		8210.80
	1/28/2014	8222.14	11.65		8210.49
	2/24/2014	8222.14	11.79		8210.35
	3/26/2014	8222.14	11.23		8210.91
	4/23/2014	8222.14	9.37		8212.77
	5/8/2014	8222.14	9.41		8212.73
MW21	8/13/2013	8222.76	12.19		8210.57
	9/18/2013	8222.76	12.39		8210.37
	10/22/2013	8222.76	12.26		8210.50
	11/13/2013	8222.76	12.13		8210.63
	12/18/2013	8222.76	12.15		8210.61
	1/28/2014	8222.76	12.44		8210.32
	2/24/2014	8222.76	12.57		8210.19
	1/28/2014	8222.76	12.44		8210.32
	4/23/2014	8222.76	10.51		8212.25
	5/8/2014	8222.76	10.38		8212.38

Notes:

DTW - Depth to Water

ug/L - Micrograms per liter

bgs - below ground surface

NA - Not applicable

NS - Not surveyed

Results noted in bold exceed Colorado Department of Public Health and Environment (CDPHE)-
Water Quality Control Commission (WQCC) Regulation 41-The Basic Standards for Groundwater

* - Absorbent product recovery sock and cage installed in MW08R in October 2013.

